HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of January 1, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On December 21, 2000, Dr. David Jewett (RSKERC), and Drs. Elise Striz and Jerome Cruz (ManTech) provided Peter Richards (MDEP) with a document entitled "Groundwater Flow Modeling Report, Microwave Development Laboratories, Needham, Massachusetts" prepared by the RSKERC Center for Subsurface Modeling Support (CSMoS). The report describes in detail the regional and local ground-water flow modeling effort developed for the site.
(99-R01-002) (D. Jewett(RSKERC)580-436-8560)

Technical Assistance to Region III: On December 14, 2000, Dr. John Wilson (RSKERC) provided Robert Shroud (Federal Facilities Branch) with review comments on a "Draft Final Study of Monitored Natural Attenuation" at the NAS Oceana RCRA Facility in Virginia Beach, VA. Although the site characterization data were of adequate detail and completeness to allow an assessment of natural attenuation processes, an evaluation of the data and the conclusions reached were questioned. A discussion of the calculation of rate constants was provided in considerable detail as well as the use of BIOSCREEN modeling in reaching the conclusion presented in the report. Other issues included assimilative capacity errors and uncertainty in the model used to determine the time of cleanup.
(98RC03-001) (J. Wilson(RSKERC)580-436-8534)

Technical Assistance to Region IV: On December 18, 2000, Dr. Ralph Ludwig (RSKERC) provided RPM Joseph Alfano with technical comments concerning a focused feasibility study and remedial action plan for the Pickettville Road Landfill and Realco Site in Jacksonville, FL. In general, the study had been well carried out resulting in data supporting the use of permeable reactive barrier (PRB) wall technology. It was pointed out, however, that a single PRB may not be sufficient to satisfactorily treat the concentration of chlorinated hydrocarbons present in ground water to appropriate levels. It was suggested that a field pilot study would be required before a final decision could be made with regard to the final remedial design. A number of other issues were discussed including the type of construction of the PRB, performance monitoring, potential clogging problems, and the use of natural attenuation to prevent impacts on downgradient creek systems.
(00-R04-004) (R. Ludwig(RSKERC)580-436-8603)

Technical Assistance to Region IV: On December 20, 2000, Dr. Scott Huling (RSKERC), and Dr. Bruce Pivetz and Rick Stransky (ManTech) provided RPM Kevin Misenheimer with review comments on the "Draft Bench-Scale Treatability Study Report, Southern Solvents Site - OU#1, Tampa, Florida (November 2000)." In general, concerns raised in earlier reviews were addressed. Overall, treatability study results suggest that $KMnO_4$ is feasible to oxidize most of the chlorinated compounds found at the site. It was pointed out that the production of undesirable products may be possible and should be monitored during pilot-scale testing.
(00-R04-005) (S. Huling (RSKERC)580-436-8610)

Technical Assistance to Region IV: On December 11, 2000, Dr. Ralph Ludwig (RSKERC), and Drs. Elise Striz and Mingyu Wang (ManTech) provided Environmental Engineer Craig Zeller with a review of documents from the Koppers Company Charleston Plant in Charleston, SC. Among the issues discussed were the effects of pumping wells on DNAPL movement, need for additional extraction wells, results of capture zone modeling, the possibility of natural attenuation processes at the site, and ground-water flow modeling.
(01-R04-001) (R. Ludwig(RSKERC)580-436-8603)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of January 15, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On January 10, 2001, Dr. Ann Azadpour-Keeley (RSKERC), and Drs. Daniel Pope, Hai Shen, and Kelly Hurt, and Barbara Wilson (Dynamac) provided RPM Dick Goehlert with an evaluation of sampling results at the Savage Well Municipal Water Supply Superfund Site in Milford, NH. In general, it was suggested that the data presented was not sufficient to support the conclusions, and that reductive dechlorination of the chlorinated compounds in ground water may not be as significant as presented in the report. Detailed comments were given concerning the sufficiency, type, and quality of data; accuracy of data interpretation; validity of the conclusions; and data gaps as well as the need for additional work.
(00-R01-003) (A. Azadpour-Keeley(RSKERC)580-436-8890)

Technical Assistance to Region IV: In a continuing technical assistance effort at the Macalloy Corporation RCRA Site in Charleston, SC, Dr. Ralph Ludwig (RSKERC) provided RPM Craig Zeller with a review of a preliminary remedial investigation report. The January 4, 2001, comments stated that a good effort had been made to better define the limits and distribution of contaminants in the subsurface and characterize ground-water flow at the site. The acquired data will provide a strong foundation for proceeding further with a feasibility study to evaluate potentially applicable remedial strategies. Specific comments were made in a number of areas including the possible need for additional data following the selection of remedial options, analytical methods, and monitoring well locations.
(99RC04-001) (R. Ludwig(RSKERC)580-436-8603)

Technical Assistance to Region VII: In a continuing technical assistance effort at the General Motors Site in Sioux City, IA, RSKERC commented on a butane biostimulation ground-water remediation pilot study work plan on October 20, 2000. On January 5, 2001, Steven Acree (RSKERC) and Barbara Wilson (Dynamac) provided RPM Nancy Swyers with a critique of a response to those comments. From the nature of the responses, it was apparent that the authors had given careful consideration to the previous review comments. As previously stated, the proposed pilot study appeared to be well planned and the cometabolism of chlorinated solvents should be feasible if adequate concentrations of butane and oxygen can be introduced into the ground water. In addition to discussing the response, recommendations were made concerning the oxygen demand exerted by butane, the use of a conservative tracer, and the need to measure carbon dioxide and alkalinity.
(98-R07-002) (S. Acree(RSKERC)580-436-8609)

Technical Assistance to Region IX: On January 3, 2001, Steven Acree (RSKERC), and Drs. Kelly Hurt and Lin Zhixun (Dynamac) provided RPM Carmen Santos with review comments on a ground-water corrective measures implementation plan at the BKK Landfill in West Covina, CA. In general, the document provided few details concerning the approach for siting new extraction wells or the investigation into the presence of nonaqueous phase liquids. It was noted that design specifications and well construction details were deferred for a future submission. It was suggested that these details be provided for review prior to implementation. Comments were offered regarding the placement of additional extraction wells, the reduction of off-site contaminant concentrations, and landfill leachate extraction.
(98RC09-001) (S. Acree(RSKERC)580-436-8609)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of January 29, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region II: In response to a request from RPM Andy Crossland, Dr. Dominic DiGiulio (RSKERC) provided comments concerning a biosparging study final report for the Jones Industrial Services Landfill Site in South Brunswick, NJ. The January 17, 2001, review discussed problems associated with VOC and DO measurements in boreholes in relation to the effectiveness of sparging. In addition, the effectiveness of biosparging in promoting the biological degradation of benzene was questioned along with a statistical analysis of the data. It was suggested that the conclusion that biosparging was very effective in promoting the biological degradation of benzene throughout the pilot test area could not be supported by the collected data.
(01-R02-001) (D. DiGiulio(RSKERC)580-436-8605)

Technical Assistance to Region III: On January 22, 2001, Dr. Scott Huling (RSKERC) provided RPM Debbie Rossi with technical review comments on a document entitled, "Work Plan for Chemical Oxidation Technology Study for Maryland Sand, Gravel and Stone Site." The site is located in Elkton, MD. A broad array of issues were discussed including the need to incorporate details from previous investigations into the current document, proposed oxidant screening study, and the remedy development plan. A number of comments were also offered with respect to the chemical oxidation treatability studies including the collection of soil samples, initial characterization of soil, estimate of total soil matrix oxidant demand, and the determination of chemical oxidation effectiveness.
(00-R03-002) (S. Huling(RSKERC)580-436-8610)

Technical Assistance to Region III: On January 12, 2001, Dr. Ralph Ludwig (RSKERC) provided RPM Kathy Davies with a review of the conceptual work plan for the evaluation of ground-water data at Langley Air Force Base in Langley, VA. In general, the approach being proposed for evaluating the significance of inorganic contaminants in ground water appeared reasonable. Specific comments related to differentiating between metals in solution and those associated with particulate matter, and approaches used to determine if parameters are statistically above background levels. Concerns were expressed with the approach for determining the relation between metal concentrations and their particular speciation, the identification of particles in suspension, and the mobility of particulate matter in ground water.
(01-R03-001) (R. Ludwig(RSKERC)580-436-8603)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Khan, Faruque A. and Robert W. Puls (RSKERC). "Reductive Detoxification and Immobilization of Chromate Present in Soils." Hydrological Science and Technology. Volume 15, No. 1-4, 1999.
(R. Puls(RSKERC)580-436-8543)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of February 5, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On October 30, 2000, Project Manager Richard Krauser requested the review of a data results summary which was developed in support of a proposal to continue the use of Monitored Natural Attenuation as a corrective action measure at the PGG Industries Site in Guayanilla, PR. In a response dated January 26, 2001, Dr. Ann Azadpour-Keeley (RSKERC), and Drs. Kelly Hurt and Zhixun Lin (Dynamac) stated that, in general, the aquifers beneath the site have the capacity for the natural attenuation of VOCs and could be considered as a candidate remedial technique. It will be necessary, however, to have a thorough monitoring plan and network to evaluate the progress of natural attenuation, to ensure the remedy's performance satisfies that which was predicted, there are no adverse impacts, and unanticipated events can be detected in time to develop an appropriate response.
(01RC02-001) (A. Azadpour-Keeley(RSKERC)580-436-8890)

Technical Assistance to Region IV: During January 16-19, 2001, Dr. Ralph Ludwig (RSKERC) attended a meeting in Charleston, SC, to discuss a proposed strategy for treating acid and metal in ground water at the Ashepoo Phosphate/ Fertilized Works Site. The use of natural attenuation was evaluated as a potential remedial strategy. Discussions were also held regarding methods for treating aquifer contamination including neutralization and stabilization agents for immobilizing arsenic and lead.
(99-R04-001) (R. Ludwig(RSKERC)580-436-8603)

Technical Assistance to Region IV: During January 16-19, 2001, Dr. Ralph Ludwig (RSKERC) and Dr. Elise Striz (ManTech) met with representatives from Region IV and the PRPs, for the Koppers Woodtreating Facility NPL Site, and their consultants in Charleston, SC, to evaluate a proposed remedial plan for the removal of creosote DNAPLs from ground water. Initially, a limited number of extraction wells were proposed to recover free-phase DNAPLs from both a shallow and intermediate aquifer at three locations. An agreement was reached, however, to install three additional extraction wells to ensure a more complete capture of the plume. It was also agreed that a monitoring well network would be developed to evaluate the effectiveness of the extraction wells and prevent further migration of the contamination.
(01-R04-001) (R. Ludwig(RSKERC)580-436-8603)

Technical Assistance to Region IV: On January 26, 2001, Dr. Ann Azadpour-Keeley (RSKERC), and Drs. Hai Shen and Daniel Pope (Dynamac) provided RPM Jon Bornholm with comments concerning natural attenuation at the National Starch & Chemical Company in Salisbury, NC. In general, it appears that the three-dimensional extent, sources, flow paths, and geochemistry of the plume are not well characterized. It was suggested that the conclusions and recommendations in the report appear to be based on insufficient data, and that considerable work remains to be done before sound recommendations can be made relative to remedial actions. The ground-water extraction system and monitored natural attenuation were discussed in detail.
(01-R04-002) (A. Azadpour-Keeley(RSKERC)580-436-8890)

Technical Assistance to Region X: On January 30, 2001, Dr. David Burden (RSKERC), and Drs. Kelly Hurt, Daniel Pope, Zhixun Lin, and Hai Shen (Dynamac) provided Project Manager Christy Brown with comments on a proposed barrier wall and the subsurface geochemistry at the Rhone-Poulenc RCRA Site in Seattle, WA. Discussed in detail were the effects of biochemistry on biodegradation, influence of toluene on metals migration, and the expected longevity of the barrier wall. Comments were also offered concerning the possibility of locating contaminant sources based on the quality of ground water.
(01RC10-001) (D. Burden(RSKERC)580-436-8606)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of February 19, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On February 9, 2001, Dr. Mary Gonsoulin (RSKERC), and Drs. Hai Shen, Zhixun Lin, and Kelly Hurt, and Barbara Wilson (Dynamac) provided RPM Lisa Wong with review comments on a document entitled "Preliminary Screening of Potential Technologies for Groundwater and Capillary Fringe Treatment" which was prepared for the Solvent Savers Site in Lincklaen, NY. It was recommended that the screening list should not be limited to; no action, pump-and-treat containment, enhanced anaerobic biodegradation/MNA, and chemical oxidation/MNA. Permeable reactive barriers should also be considered as a remedial alternative to treat the contamination present in ground water. Specific comments were offered with respect to a better characterization of the site, DNAPL movement in the subsurface, and the presentation of data.
(00-R02-001) (M. Gonsoulin(RSKERC)580-436-8616)

Technical Assistance to Region IV: In response to a request for technical assistance at the MacDill AFB in Tampa, FL, Dr. David Jewett provided Hydrologist Kay Wischkaemper with a review of a flow model technical memorandum. It was pointed out the selection of MODFLOW appears to be a valid choice to simulate ground-water flow and contaminate transport and fate at the site. However, because of limited data combined with a high level of uncertainty, the ability of the model to accurately recreate processes occurring in the subsurface will be questionable. This level of uncertainty in the input will be carried through to the model's output resulting in factors which must be considered by those relying on the output to make remedial decisions. Responses to specific questions included the method for determining ground-water elevations, model calibrations, tidal effects on ground-water flow, annual recharge, and model boundary conditions.
(01-R04-003) (D. Jewett(RSKERC)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Jorgensen, Eric E. and Timothy J. Canfield (RSKERC), and Frederick W. Kutz (NERL). "Restored Riparian Buffers as Tools for Ecosystem Restoration in the Maia: Processes, Endpoints, and Measures of Success for Water, Soil, Flora, and Fauna." Environmental Monitoring & Assessment 63(1), 2000.

(E. Jorgensen(RSKERC)580-436-8545)

Jewett, David G. (RSKERC), Ellen Manges (EPA Reg. 9), Gregory J. Reller (TetraTech), and Edward R. Bates (NRMRL). "Bounds on Subsurface Mercury Flux from the Sulphur Bank Mercury Mine, Lake County, California." Extended Abstract. EPA Workshop, Nov. 28-30, 2000, San Francisco, CA.

(J. Jones(RSKERC)580-436-8593)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of February 26, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On February 13, 2001, Dr. Dominic DiGiulio (RSKERC) provided RPM Jim Dilorenzo with review comments concerning time frames and SVE/steam injection for the remediation of contaminated ground water at the Beede Waste Oil Superfund Site in Plaistow, NH. It was pointed out that, due to the complexities associated with subsurface fate and transport processes, it is unreasonable to expect mathematical models to provide reliable estimates of ground-water restoration times. However, modeling is useful in obtaining insights into the problem and confirming that source reduction will substantially decrease the time required for ground-water restoration. The use of SVE alone or with steam injection was discussed in detail with respect to the overall objectives of the remediation plan and the contaminants involved at the site.
(01-R01-001) (D. DiGiulio(RSKERC)580-436-8605)

Technical Assistance to Region III: On February 7, 2001, representatives from Region 3 and Worcester County (Ocean City), MD, consulted with Drs. Eric Jorgensen and Paul Mayer concerning opportunities for implementing riparian management principles and management practices into existing developments and into developments soon to be permitted and zoned. Questions with regard to buffer width, composition, and function were discussed. Further, in-stream management potential and wetland creation were discussed as areas for management intervention that had here to fore not been considered.
(Misc.) (E. Jorgensen(RSKERC)580-436-8545)

Technical Assistance to Region III: On February 14, 2001, Dr. Scott Huling (RSKERC) provided Senior Geologist Bruce Rundell with comments concerning the results of a chemical oxidation bench test for the remediation of contaminated ground water at the Berks Sand Pit Site in Longswamp Township, PA. Based on a detailed assessment of the study, it was suggested that the results were inclusive. Volatile losses were significant and accounted for the majority of the contaminant reduction. Due to significant variability in reported contaminant concentrations and estimated mass fractions, the accuracy of percent reduction attributed to oxidation was poor. It was recommended to either cancel the field implementation, redo the bench-scale study, or investigate other technologies to achieve the remedial objectives. A number of recommendations were suggested to improve the reliability of the investigation.
(00-R03-001) (S. Huling(RSKERC)580-436-8610)

Technical Assistance to Region IX: On February 13, 2001, Steve Acree and Dr. Elise Striz (RSKERC) attended a meeting at the Los Angeles Regional Water Quality Control Board in Los Angeles, CA, to evaluate ground-water modeling at the Charnock and Arcadia RCRA Sites in Santa Monica, CA. Also attending the meeting were representatives from the City of Santa Monica, Southern California Water Company, California Department of Health Services, and Region 9 and their contractors. The major concerns of the meeting were model calibration techniques, boundary conditions, and available data.
(97RC09-001) (S. Acree(RSKERC)580-436-8609)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 5, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On February 23, 2001, Dr. Ralph Ludwig (RSKERC) provided RPM Syed Quadri with review comments concerning the feasibility of using a flushing infiltration system to remediate contaminated soil at the Hooker Chemical/Ruco Polymer Corporation Site in Hicksville, NY. On the basis of the limited information provided, the proposed soil flushing system design should serve to accelerate clean-up of the deep soil at the site. However, the extent to which the system will be beneficial cannot be determined without more site-specific information on parameters such as permeability, heterogeneity, and soil organic matter content. Questions were posed concerning the dimensions of the infiltration gallery and recapture of the flushing solution.
(01-R02-002) (R. Ludwig(RSKERC)580-436-8603)

Technical Assistance to Region IV: In a continuing technical assistance effort at the Aberdeen Pesticides Superfund Site in Aberdeen, NC, Dr. Mary Gonsoulin (RSKERC) and Dr. Daniel Pope (Dynamac) provided RPM Jon Bornholm with review comments on a monitoring report. The purpose of the monitoring event was to further define ground-water conditions after a soil remedial action. The March 2, 2001, comments suggested that the current round of sampling data provided little support for the choice of natural attenuation as a remedy. It was pointed out that some of the sampling points around the source area indicated increases in contaminant concentrations. Increases in contaminant concentrations at downgradient areas of the plume were also noted. As mentioned in previous reviews, it appears that the existing monitoring network is inadequate for the proper assessment of monitored natural attenuation as a remedy.
(99-R04-004) (M. Gonsoulin(RSKERC)580-436-8616)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Puls, Robert W. (RSKERC), Nic Korte (Oak Ridge National Laboratory), Arun Gavaskar (Battelle, Columbus), and Charles Reeter (Port Hueneme, CA). "Long-Term Performance of Permeable Reactive Barriers: An Update on a U.S. Multi-Agency Initiative." Proceedings of the Seventh, FZK/ TNO Conference on Contaminated Soil. Leipzig, Germany. September 2000.
(R. Puls(RSKERC)580-436-8543)

Barbaro, Jerry R. and James F. Barker (Univ. of Waterloo). "Controlled Field Study on the Use of Nitrate and Oxygen for Bioremediation of a Gasoline Source Zone." Bioremediation Journal 4(4), 2000.
(S. Hutchins(RSKERC)580-436-8563)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 12, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On January 30, 2001, RPM Joseph LeMay requested review comments on a "Bio-Filter/Phytobed Pilot Field Study Work Plan" for the Resolve Superfund Site in Dartmouth, MA. On March 7, 2001, Dr. Scott Huling (RSKERC), and Dr. Bruce Pivetz and Rick Stransky (ManTech) stated that the overall conceptual plan was not found to be problematic, however, there were several technical issues that required clarification. General comments concerned an overall water budget, variability in input contaminant loadings as well as hydraulic and treatment capacity, and the preparation of treatment beds. A number of detailed comments were offered with respect to the modeling of the pilot system, filtration studies, performance assessment, and monitoring program.
(01-R01-002) (S. Huling(RSKERC)580-436-8610)

Technical Assistance to Region III: On March 5, 2001, Drs. Scott Huling and Eva Davis (RSKERC) provided RPM Debbie Rossi with a technical review of a remediation technology screening investigation work plan for the Maryland Sand, Gravel & Stone Site in Elkton, MD. With respect to the chemical oxidation technology a number of issues were discussed including the field collection and characterization of soil, soil matrix oxidant demand, and chemical oxidation effectiveness. Issues concerning the thermal treatment technology included heating methods, data collection, and bench-scale testing.
(00-R03-002) (S. Huling(RSKERC)580-436-8610)

Technical Assistance to Region V: On March 6, 2001, Dr. David Burden (RSKERC), and Drs. Vic Kelson and Jack Whittman of WHPA, Inc., a subcontractor to Dynamac, provided Region V Brownfields Representative Jane Neumann with review comments on the USGS Modeling for the Menomonee Valley Brownfields Demonstration Pilot in Milwaukee, WI. In general, the application of the analytic element model GFLOW to the Menomonee Valley setting for the purpose of regional analysis was appropriate. The use of GFLOW, especially when combined with the local MODFLOW analysis, is an appropriate tool for this study. Problems of issue in the review included the exclusion of transmissivity in the glacial till and dolomite, omission of sinks and sources, simulation of ground-water divides, and head calibration.
(01BF05-001) (D. Burden(RSKERC)

Technical Assistance to Region IX: On March 5, 2001, Dr. David Burden (RSKERC) and Dr. Mingyu Wang (ManTech) provided Region 9 with comments concerning ground-water fate and transport modeling at the Tosco Avon Refinery in Martinez, CA. The modeling was implemented to evaluate the worse case exposure point concentrations for chemicals of concern that may impact nearby surface water bodies. The selection of the modeling approach and the complexity of the system were discussed in detail. It was suggested that, since the hydrogeologic conditions of the investigated site were not simple as demonstrated by the irregularity of boundaries, different natures of boundaries, multiple layering etc., it may be better to implement a complex model package such as Visual MODFLOW or GMS for ground-water flow and contaminant transport modeling.
(01RC09-001) (D. Burden(RSKERC)580-436-8606)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 19, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On March 13, 2001, Dr. Ann Keeley (RSKERC) and Drs. Dan Pope and Kelly Hurt (Dynamac) provided RPM Kate Lose with review comments on an RI/FS study for ground water at the Fike/Artel Chemical Superfund Site in Nitro, WV. It was pointed out that, in general, there are multiple contaminant sources at the site which result in plumes which overlap, and each plume may contain varying contaminants. Site characterization and performance monitoring activities must be detailed enough to distinguish the plumes to ensure the effectiveness of Monitored Natural Attenuation (MNA). If biodegradation is proposed as a significant part of natural attenuation of a particular contaminant, the necessary geochemical conditions for biodegradation must be shown to exist. It is common for chlorinated solvents, for example, to be degraded at one part of a site but not in another due to differences in geochemical conditions. Therefore, sensitive receptors could be adversely affected even though it could be demonstrated that at least part of the plumes had conditions where biodegradation was occurring. For many of the contaminants of concern, there is currently no guidance for natural attenuation.
(01-R03-003) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region III: On March 12, 2001, Steven Acree and Dr. Robert Puls (RSKERC) provided RPM Ron Davis with comments concerning the design of a Permeable Reactive Subsurface Barrier (PRB) at the Arrowhead Plating Site in Montross, VA. Concerns were expressed about the heavy reliance of the PRB design on projections of future hydraulic gradients following capping. Concerns were also expressed about the proposed ground-water monitoring system and PRB performance criteria. A comparison of three PRB installation methods were discussed in detail.
(98-R03-004) (S. Acree(RSKERC)580-436-8609)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Charnock and Arcadia Sites in Santa Monica, CA, Steven Acree and Dr. Elise Striz (RSKERC), and Dr. Mingyu Wang (ManTech), provided RPM Steve Linder with a review of a ground-water modeling report. The March 14, 2001, comments stated that, in general, there are several aspects of the model which require further justification in order to allow a determination of reliability of the simulations. Areas of concern included the limited data set used for steady-state calibration, an appropriate representation of areal faults, justification of a southwesterly hydraulic gradient in the shallow aquifer, and data supporting the assumed shallow aquifer/aquitard stratigraphy. Numerous general and specific comments were also offered on a variety of issues.
(97RC09-001) (S. Acree(RSKERC)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Kampbell, D.H. (RSKERC), C.B. Snyder and D.C. Downey (Parsons Engineering), and J.E. Hansen (Brooks AFB). "Light Nonaqueous-Phase Liquid Hydrocarbon Weathering at Some JP-4 Fuel Release Sites." Proceedings of the 2000 Conference on Hazardous Waste Research. Denver, CO. May 23-25, 2000.
(D. Kampbell(RSKERC)580-436-8564)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 26, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: The Massachusetts Military Reservation on Cape Cod, MA, has been receiving TSC technical assistance since 1996. On March 16, 2001, Dr. Ann Keeley (RSKERC) and Drs. Kelly Hurt, Kim Winton, and Hai Shen (Dynamac) provided RPM Paul Marchessault with review comments on the "Massachusetts Military Reservation Plume Response Program - Draft Landfill-1 2000 Annual System Performance and Ecological Impact Monitoring Report." In general, the presented data show that the current extraction and treatment system is not controlling the landfill plume which has expanded beyond the desired hydraulic containment line. It was also stated that the impacts of the plume on surface water and aquatic ecology were not evaluated in the report. Discussed in detail were contaminants in the plume other than the COCs, adequacy of the monitoring network, statistical testing, and if the conclusions of the report are appropriate and supported by the data.
(96-R01-007) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region III: On March 13, 2001, Dr. Ann Keeley (RSKERC) and Dr. Kelly Hurt (Dynamac) provided RPM Kate Lose with a technical review of the PRP's response to earlier TSC comments on the RI/FS as well as additional information at the Fike/Artel Chemical Superfund Site in Nitro, WV. The comments focused on the measurement of dissolved oxygen concentrations and redox potentials in ground water since the report contained data where DOs were above 1 mg/L and the corresponding Eh values were negative. It was pointed out that the parameters should be measured using a flow-through cell which protects the tested water from the atmosphere thus allowing a more accurate evaluation of the geochemical environment associated with each contaminated zone.
(01-R03-003) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region IV: On March 15, 2001, Dr. Scott Huling (RSKERC) and Dr. Bruce Pivetz and Rick Stransky (ManTech) provided Douglass Fitton (Florida Department of Environmental Protection) with a review of a report entitled "Draft Co-oxidation Pilot Test Plan" which was developed for the Butlers Cleaners Site in Jacksonville, FL. The salient issues discussed were the suggested use of SVE during the pilot-scale study to capture volatiles, pretest sampling, $KMnO_4$ injection, volume of extraction, and a possible contingency plan.
(01RC04-001) (S. Huling(RSKERC)580-436-8610)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of April 9, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: The Center for Subsurface Modeling Support (CSMoS) developed a ground-water flow and contaminant transport model for the Microwave Development Laboratory (MDL) Site in Needham, MA, and submitted it to the Massachusetts Department of Environmental Protection (MADEP) on February 16, 2001. On March 30, 2001, Drs. David Jewett and Elise Striz (RSKERC) provided the MADEP with supplemental simulations using the model. These included three variations on a 50-year contaminant transport period.
(99-R01-002) (D. Jewett(RSKERC)580-436-8560)

Technical Assistance to Region I: On March 22, 2001, Dr. Ann Keeley (RSKERC) and Drs. Jin-Song Chen and Zhixun Lin (Dynamac) provided RPM Byron Mah with review comments on geochemical modeling for assessing the natural attenuation of arsenic in ground water at the Barkhamsted New Hartford Landfill Superfund Site in Barkhamsted, CT. Geochemical modeling for assessing natural attenuation of arsenic was discussed in depth along with the factors affecting attenuation and the geochemical parameters considered in the modeling exercise. The results of the modeling indicate that attenuation of arsenic is predominantly affected by sorption on the surfaces of ferric iron hydroxides. It was suggested that a detailed mineralogical and geochemical characterization of the aquifers, such as the determination of the mineral phases of sediments and a systematic collection and analysis of ground water, will lead to a more realistic assessment of the natural attenuation capacity of the ground-water system.
(99-R01-003) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region II: On March 22, 2001, Drs. Mary Gonsoulin and Eva Davis (RSKERC) provided RPM Lisa Wong with comments concerning thermal enhancements as potential treatment technologies for the remediation of ground water and the capillary fringe at the Solvent Savers Site in Lincklaen, NY. Mechanisms for enhanced recovery by thermal methods were discussed along with the advantages and disadvantages of different thermal technologies. The problems associated with the use of existing PVC wells was pointed out as well as the incompatibility of bentonite with the temperatures and pressures commonly used during thermal remediation. It was also suggested that microbial counts increase and the dechlorination of chlorinated solvents or oxidation of petroleum hydrocarbons by either biological or physical reactions are likely to continue during thermal remediation operations.
(00-R02-001) (M. Gonsoulin(RSKERC)580-436-8616)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Jorgensen, E.E. (RSKERC). "Dispersal as a Mechanism Limiting Diversity of High Latitudes." Biota 1:67-76. 2000.

(E. Jorgensen(RSKERC)580-436-8545)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of April 16, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On March 22, 2001, Dr. Scott Huling (RSKERC), and Dr. Bruce Pivetz and Rick Stransky (ManTech) provided RPM Kevin Misenheimer with a review of a document entitled, "Draft Preliminary Design Criteria Report - OU#1" for the Southern Solvents Site in Tampa, FL. Discussed in detail were the nature and extent of PCE, TCE, and 1,2-DCE contamination in soil and ground water, remedial objectives, and soil confirmation testing. It was suggested that soil vacuum extraction (SVE) of these target compounds from the subsurface appears to be a viable remedial option. If used in conjunction with catalytic oxidation, the treatment process will destroy the compounds and minimize the potential for future exposure pathways. It was pointed out that at a similar site in Florida, SVE was used to reduce the concentration of PCE and other volatiles in the unsaturated zone over the course of three months. It was recommended that the use of this remedial technology be evaluated for application at this site and that cost and risk comparisons be determined between excavation and SVE.
(00-R04-005) (S. Huling(RSKERC)580-436-861)

Technical Assistance to Region IV: In an additional review of a feasibility study at the Southern Solvents Site in Tampa, FL, Dr. Dominic DiGiulio (RSKERC) stated that SVE is preferable to excavation for the treatment of surficial (0 to 6 feet below ground surface) soils contaminated with volatile compounds. The judgement expresses in the April 9, 2001, response was based on the potential worker and community exposure to VOCs during excavation, transfer versus treatment of the problem, apparent suitability of soils to treatment by SVE, and the eventual recontamination of replacement soil after excavation due to vapor diffusion from contaminated ground water.
(00-R04-005) (D. DiGiulio(RSKERC)580-436-8605)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Pivetz, Bruce E. (ManTech). "Phytoremediation of Contaminated Soil and Ground Water at Hazardous Waste Sites." EPA Issue Paper. EPA/540/S-01/500.
(R. Cosby(RSKERC)580-436-8512)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of April 23, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On April 13, 2001, Dr. Ann Keeley (RSKERC) and Drs. Hai Shen and Kim Winton (Dynamac) provided RPM Paul Marchessault with review comments regarding a proposed monitoring well network at the Massachusetts Military Reservation on Cape Cod, MA. In general, concerns were expressed about the exclusion of TOC and H_2 as monitored natural attenuation (MNA) parameters and the revision of sampling frequency in certain wells. Detailed comments were offered with respect to MNA parameters, the inclusion of certain wells in the monitoring network, sampling frequency, and the need to sample for total metals.
(96-R01-007) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region II: On April 18, 2001, Dr. Scott Huling (RSKERC) and Rick Stransky and Dr. Bruce Pivetz (ManTech) provided RPM John DeMurley with a technical review of a feasibility study for the Fort Dix Superfund Site in Fort Dix, NJ. The study presented two remedial alternatives at the source area for chlorinated solvents in ground water. One proposal was for air sparging/soil vapor extraction and the second was the use of a Hydrogen Release Compound (HRC). Both alternatives rely on monitored natural attenuation for downgradient contaminant reduction. Based on a conceptual description of the remedial alternatives and preliminary design information, there did not appear to be significant problems with either alternative that would prevent their being included in an ROD. The selection of the HRC approach as the preferred alternative also appeared reasonable based on the lower cost. It was pointed out, however, that uncertainties in the potential contaminant mass could alter the cost of either alternative.
(99-R02-001) (S. Huling(RSKERC)580-436-8610)

PUBLIC SERVICE ACTIVITIES

Drs. Ann Keeley, Steve Schmelling, and Randall Ross (RSKERC) have been appointed to the newly constituted Ada Water Resources Board. On April 10, 2001, the Board met at the State Capitol Building with the Director of the Oklahoma Water Resources Board and his staff to discuss a proposed study of the Arbuckle-Simpson Aquifer -- Ada's source of water. Also attending the meeting were city officials, state legislators, and the news media. The Board will make recommendations regarding present and future water needs, water resources development, acquisition of additional water resources, and the protection and conservation of Ada's water resources.

On March 30, 2001, the following individuals served as judges at the 2001 Oklahoma State Science and Engineering Fair at East Central University: Drs. Ann Keeley, Eric Jorgensen, Scott Huling, and Joe Williams and Bart Faulkner (RSKERC), and Dr. Ron Drake (Dynamac).

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Huling, S.G. (RSKERC), and R.G. Arnold, R.A. Sierka (Univ. of AZ), and M.R. Miller (East Central Univ.) "Influence of Peat on Fenton Oxidation." Water Research. 35(7). 2001.
(S. Huling(RSKERC)580-436-8610)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of May 7, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On April 26, 2001, Steve Acree (RSKERC) attended a meeting at the Nevada Department of Environmental Protection in Carson City, NV, to discuss recent data and implications regarding contaminant capture at the Sparks Solvent/Fuel Site in Sparks, NV. Also attending the meeting were representatives from the State of Nevada, EPA Region 9, and the responsible parties. The system is currently operating at design flow rates, however, data indicate that full capture has not been achieved. System modifications including the installation of additional wells and increases in pumping rates were discussed.
(94-R09-001) (S. Acree(RSKERC)580-435-8609)

RESEARCH IN PROGRESS

On April 26, 2001, Dr. Ann Keeley (RSKERC) attended a public hearing in Pasadena, CA, before the California Regional Water Quality Control Board, Los Angeles Region. Included on the agenda were discussions concerning the issuance of a permit to conduct a pilot study which involves injection of propane, oxygen, bacteria, deuterated MTBE, and tracers into ground water at Port Hueneme to demonstrate and evaluate the enhanced biodegradation of intrinsic MTBE at the Naval facility north of Los Angeles. The permit was granted and the project is scheduled to begin in May. Pre-project bromide ground-water tracer studies were conducted during February and March.
(Ann Keeley(RSKERC)580-436-8890)

TECHNICAL PRESENTATION

Dr. Scott Huling (RSKERC) made a presentation entitled, "In-Situ Chemical Oxidation via the Fenton Reaction: Practical and Theoretical Considerations" at the State Coalition for Dry Cleaners Conference held in Scottsdale, AZ, April 18-20, 2001.
(S. Huling(RSKERC)580-436-8610)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Jorgensen, E.E. (RSKERC). "Emission of Volatile Compounds by Seeds Under Different Environmental Conditions." American Midland Naturalist 145:419-422. 2000.
(E. Jorgensen(RSKERC)580-436-8545)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of May 14, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On May 3, 2001, Steve Acree (RSKERC) participated in a site visit and a meeting with Region 1 representatives to evaluate performance monitoring systems at the Pine Street Canal Superfund Site in Burlington, VT. Discussions focused on current site conditions and the finalization of a network for monitoring remedial performance. Other issues included data regarding the distribution of nonaqueous phase contaminants obtained during the recent installation of the monitoring network, and the implications of the network design.
(94-R01-001) (S. Acree(RSKERC)580-436-8609)

Technical Assistance to Region I: On May 9, 2001, Dr. Scott Huling (RSKERC) and Dr. Bruce Pivetz and Rick Stransky (ManTech) provided RPM Todd Borci with a review of a document entitled, "Proposal to Demonstrate Perchlorate and RDX Groundwater Treatment at Massachusetts Military Reservation." The facility is located on Cape Cod, MA. It was suggested that the simultaneous degradation of perchlorate and RDX appeared possible and the fluidized bed reactor technology in the proposal appeared to have sufficient merit to move forward. A phased approach was recommended with bench-scale laboratory tests to be conducted prior to any pilot-scale studies or full-scale applications. Other comments concerned the microbial biodegradation of perchlorate and RDX, electron donor requirements, and the possibility of using phytoremediation as a remedial alternative.
(01-R01-003) (S. Huling(RSKERC)580-436-8610)

Technical Assistance to Region III: On May 3, 2001, Dr. Mary Gonsoulin (RSKERC) and Dr. Daniel Pope (Dynamac) provided RPM Hilary Thornton with comments concerning a biodegradation treatability study for the Standard Chlorine of Delaware Site in New Castle, DE. The bench-scale study used various combinations of SVE, bioventing, and biodegradation under sequential anaerobic/aerobic conditions. Due to high contaminant concentrations, low required final levels, and the inability of laboratory studies to achieve required levels, there is doubt that the suggested remedy will meet remedial goals. It was suggested that if field studies are undertaken they should be conducted as nearly as possible under the same conditions as those anticipated for full-scale operations. It was also suggested that it might be appropriate to consider other remedial options such as thermal technologies or solvent extraction.
(93-R03-001) (M. Gonsoulin(RSKERC)580-436-8616)

Technical Assistance to Region IX: On May 1, 2001, Steve Acree (RSKERC) attended a meeting in Los Angeles, CA, to assist in the evaluation of ground-water flow modeling at the Charnock Wellhead MTBE Site in Santa Monica, CA. Also attending the meeting were representatives from the Regional Water Quality Board, City of Santa Monica, Southern California Water Company, California Department of Health Services, EPA Region 9 and their contractors, and the responsible parties. Concerns focused on model calibration, boundary conditions, and data defining the shallow hydrostratigraphy.
(97RC09-001) (S. Acree(RSKERC)580-436-8609)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of May 21, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On May 4, 2001, Dr. Ann Keeley (RSKERC) and Drs. Jerome Cruz and Mingyu Wang (ManTech) provided RPM Dick Goehlert with comments concerning the conversion of the ground-water model USGS MODFLOW into Visual MODFLOW, and the enhancements made to the model by virtue of data updates, new data additions, and other modifications. The modeling addresses an estimation of time required for PCE concentrations to reach 5 µg/L and an evaluation of MNA and ground-water extraction alternatives at the Savage Well Municipal Water Supply Superfund Site in Milford, NH. In general, the report provided suitable documentation on the methodology for file conversion, later enhancements, and discussion of results. There was sufficient detail for the reviewers to follow the methodology for model conversions. Some suggestions were offered to improve an understanding of the model conversion and modeling results.
(00-R01-003) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region II: On May 11, 2001, Dr. Ann Keeley (RSKERC) and Dr. Kelly Hurt (Dynamac) provided RPM Rick Robinson with comments on an exchange of letters between the New Jersey Department of Environmental Protection and representatives of the Caldwell Trucking Company Superfund Site in Fairfield, NJ. The issue in question is the necessity of plume containment during the application of enhanced bioaugmentation at the source area of ground-water contamination. In addition to discussing various facets of plume containment, the need for a pilot-scale project was pursued. A list of site-related activities was suggested as interim measures to be undertaken to develop needed site information.
(00-R02-003) (A. Keeley(RSKERC)580-436-8890)

Technical Assistance to Region VIII: On May 15, 2001, Dr. David Jewett (RSKERC) attended a meeting in Rapid City, SD, to discuss the Gilt Edge Mine Superfund Site. Issues of concern were interim water treatment alternatives and investigations of underground mine workings, project background and the current status of site characterization activities, and potential remedial alternatives. Also attending the meeting were representatives from Region 8; U.S. Bureau of Reclamation; SD Department of Environment and Natural Resources; SD Department of Game, Fish, and Parks; and consultants. A site visit was conducted on May 16.
(01-R08-001) (D. Jewett(RSKERC)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilkin, R.T. (RSKERC) and M.A Arthur (Penn. State. Univ.). "Variations in Pyrite Texture, Sulfur Isotope Composition, and Iron Systematics in the Black Sea: Evidence for Late Pleistocene to Holocene Excursions of the O_2-H_2S Redox Transition." Geochimica et Cosmochimica Acta. 65(9), 2001, p. 1399-1416.
(R. Wilkin (RSKERC) 580-436-8874)

Yang, S. and A. Navrotsky (Univ. California, Davis), and R. Wilkin (RSKERC). "Thermodynamics of Ion-Exchanged and Natural Clinoptilolite." American Mineralogist. 86, 2001, p. 438-447.
(R. Wilkin(RSKERC)580-436-8874)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of June 4, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On May 22, 2001, Dr. David Jewett (RSKERC) attended an internal technical review team meeting and on May 23 a Site Stakeholders technical meeting concerning the Sulphur Bank Mercury Mine Superfund Site in Clearlake, CA. Issues discussed were the RI development for operable units 1 and 2, a ground-water technical memorandum, rock sampling investigation, atmospheric mercury flux sampling, and the north wetlands.
(97-R09-006) (D. Jewett(RSKERC)580-436-8560)

Technical Assistance to Region IX: On May 30, 2001, Steven Acree (RSKERC) provided RPM Steve Linder with comments on the minutes from a ground-water model technical meeting concerning the Charnock and Arcadia Sites in Santa Monica, CA. In general, the minutes accurately reflected discussions during the meeting, however, the modeling revisions discussed were often vague and lacked details. It was recommended that a rapid schedule be established for submitting the revised, calibrated model and documentation for review. A number of suggestions were offered to aid in focusing and improving the quality of detailed responses.
(97RC09-001) (S. Acree(RSKERC)580-436-8609)

Technical Assistance to the Technology Innovation Office: On May 15, 2001, Dr. Ann Keeley (RSKERC) provided Linda Fiedler (TIO) with a review of a draft report entitled "Use of Bioremediation at Superfund and Other Federal Cleanup Program Sites." In general, the document was found to be well written, informative, and sure to find a wide audience among those working in the field of site remediation. Only minor suggestions were offered with respect to the end products of biodegradation and the definition of lagoon aeration.
(Misc.) (A. Keeley(RSKERC)580-436-8890)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

McInnes, Daniel (ManTech) and Don Kampbell (RSKERC). "The Bubble Stripping Method for Determining Dissolved Hydrogen (H_2) in Well Water." Journal of Analytical Chemistry 4(6), 2000.
(D. Kampbell(RSKERC)580-436-8564)

DiGiulio, Dominic C. (RSKERC), Ravi Varadhan (Johns Hopkins Univ.), and Mark L. Brusseau (Univ. of Arizona). "Limitations of ROI Testing for Venting Design: Description of an Alternative Approach Based on Attainment of a Critical Pore-Gas Velocities in Contaminated Media." Ground Water Monitoring Remediation, Winter 2000.
(D. DiGiulio(RSKERC)580-436-8605)

Su, Chunming (ManTech) and Robert W. Puls (RSKERC). "Arsenate and Arsenite Removal by Zero-Valent Iron: Kinetics, Redox Transformation, and Implications for In Situ Groundwater Remediation." Environmental Science and Technology, 35(7), 2000.
(R. Puls(RSKERC)5580-436-8534)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of June 11, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On June 4, 2001, Dr. Ann Keeley (SPRD) and Drs. Hai Shen and Daniel Pope (Dynamac) provided RPM Dick Goehlert with comments on responses to an earlier TSC review on sampling results at the Savage Well Superfund Site in Milford, NH. It was suggested that the previous comments were still valid with respect to the applicability of MNA as a remedy for the site. The concentration of PCE in several wells in the core of the plume has changed relatively little since 1996, and low TOC levels indicate that the reductive dechlorination activity is low or nonexistent. The wide variation in estimated biodegradation rates suggests that little reliance should be placed on the calculated rates. In general, the use of MNA as a remedy for the site remains questionable.
(00-R01-003) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region III: In a continuing technical assistance effort at the Arrowhead Plating Site in Montross, VA, Steven Acree (SPRD) provided RPM Ron Davis with review comments concerning the design for a permeable reactive subsurface barrier (PRB). In the June 1, 2001, comments it was indicated that, in general, many of the concerns expressed in previous reviews were addressed through revisions to the monitoring plan. However, concerns still exist regarding proposed procedures for verification of the PRB installation and determination of performance. Suggestions were offered with respect to the post-construction verification of the PRB thickness, monitoring well sampling frequency, and the proposed performance criteria.
(98-R03-004) (S. Acree(SPRD)580-436-8609)

Technical Assistance to Region IV: On May 30, 2001, Dr. Ralph Ludwig (SPRD) provided RPM Brian Farrier with review comments on a draft feasibility study for the Brunswick Wood Preserving Superfund Site in Brunswick, GA. The review focused on the identification of ground-water remediation alternatives. Detailed comments were offered in a number of areas including the effect of DNAPLs in selecting remedial alternatives, the need for additional information for plume characterization, hydrogeology, and the effect of DNAPLs on the integrity of the proposed clay barrier wall.
(01-R04-005) (R. Ludwig(SPRD)580-436-8603)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Zhang, Zhonglong (ManTech) and Mohamed M. Hantush (SPRD). "Estimation of Groundwater Pollution Potential by Pesticides in Mid-Atlantic Coastal Plain Watersheds." Watershed Management 2000. June 21-24, 2000. Colorado State University, Fort Collins, CO. Symposium Paper 600/A-01/021.
(R. Cosby(SPRD)580-436-8512)

Zhang, Zhonglong (ManTech) and Mohamed M. Hantush (SPRD). "Pesticide Leaching Analytical Model and GIS-Based Application in Agricultural Watersheds." 2000 Joint Conference on Water Resources Engineering and Water Resources Planning and Management. July 30 - August 2, 2000. Minneapolis, MN. Symposium Paper 600/A-01/022.
(R. Cosby(SPRD)580-436-8512)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of June 18, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: In a continuing technical assistance effort at the Saegertown Superfund Site in Saegertown, PA, Dr. Ann Keeley (SPRD), and Barbara Wilson and Dr. Kim Winton (Dynamac) provided RPM David Turner with review comments on a report entitled "2000 Pre-Remedial Design Investigation and Assessment of the Voluntary Enhanced Bioremediation Pilot Study." The June 13, 2001, review focused on additional biochemical parameters and computations which should be included in the remedy analysis, and recommendations concerning the remediation of vinyl chloride. The report did not provide sufficient evidence that the pilot study is performing as anticipated and, although the injection of molasses may be effective in the close vicinity of the injection points, there is little evidence that it is enhancing dechlorination on a site-wide scale. It was recommended that the use of hydrogen or a hydrogen releasing compound be used instead of molasses as a driver for reductive dechlorination due to the low permeability of the aquifer in the study area. The aerobic treatment of the plume prior to its leaving the property boundary should be successful in treating vinyl chloride.
(97-R03-003) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region IV: On June 13, 2001, Dr. Randall Ross (SPRD), and Drs. Zhixun Lin and Kelly Hurt (Dynamac) provided RPM Annie Godfrey with review comments concerning the Remedial Investigation and Feasibility Study Reports for the LCP Chemicals Site in Brunswick, GA. The general lack of ground-water quality data imposed serious limitations on the ability to draw conclusions and make predictions with respect to the fate and transport of ground-water contaminants. While several of the conclusions stated in the documents could not be supported by existing site characterization data, other portions of the documents appeared to contradict one another. Detailed comments were offered in a number of areas including the horizontal and vertical migration of contaminants, the need for bench and pilot scale remedial technology evaluations, and additional data needs.
(01-R04-004) (R. Ross(SPRD)580-436-8611)

Technical Assistance to Region VII: On June 11, 2001, Steven Acree (SPRD) and Barbara Wilson (Dynamac) provided RPM Annie Godfrey with comments concerning a butane biostimulation pilot study work plan for the General Motors Site in Sioux City, IA. The proposed pilot study appears to be well planned. The cometabolism of chlorinated solvents should be feasible if adequate concentrations of butane and oxygen can be provided in the ground water and if there is sufficient time for an adequate growth of microbial biomass. Detailed recommendations for improving the study were provided in a number of areas including a more complete sampling schedule and the use of low-flow sampling techniques for the collection of volatile organics and butane.
(98-R07-002) (S. Acree(SPRD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Azadpour-Keeley, Ann (SPRD), Jack W. Keeley (Dynamac), Hugh H. Russell (CHR2 Environmental Services), and Guy W. Sewell (SPRD). "Monitored Natural Attenuation of Contaminants in the Subsurface: Processes." Spring 2001 GWMR (97).

(A. Keeley(SPRD)580-436-8890)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of June 25, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On June 13, 2001, Dr. Ann Keeley (SPRD), and Drs. Hai Shen and Daniel Pope (Dynamac) participated in a conference call concerning the applicability of MNA at the Savage Well Superfund Site in Milford, NH. Also participating in the call were RPM Dick Goehlert, Dick Wiley, and the Region's contractors. The focus of the call was an exchange of ideas concerning the potential for biodegradation of chlorinated solvents based on historical ground-water quality data. It was suggested that the existing evidence appears to support the ROD and that pump-and-treat should be applicable at the core of the plume while MNA appears to be effective at its periphery.
(00-R01-003) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Sparks Solvent/ Fuel Site in Sparks, NV, Steven Acree (SPRD) provided OSC Donn Zuroski with review comments on proposed remediation system modifications. The June 22, 2001, critique stated that, in general, the location of new extraction wells and increased pumping rates were appropriate and should be initiated as rapidly as possible. It was also recommended that the monitoring program be modified to include additional hydraulic gradient measurements in order to optimize extraction rates.
(94-R09-001) (S. Acree(SPRD)580-436-8609

Technical Assistance to Region IX: On June 12, 2001, Steven Acree (SPRD) and Dr. Kelly Hurt (Dynamac) attended a meeting in San Francisco, CA, to assist in the evaluation of remedial design plans for the BKK Landfill in Covina, CA. The State of California, Region 9 and their contractors, and the facility representatives also attended the meeting which focused on the draft Corrective Measures Implementation Plan. Issues of concern included the criteria for use in designing the extraction systems, approaches for addressing uncertainties in ground-water flow, and the development of appropriate data quality objectives. A site visit was conducted on June 13, 2001.
(98RC09-001) (S. Acree(SPRD)580-436-8609)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of July 2, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: In a continuing technical assistance effort at the Massachusetts Military Reservation on Cape Cod, MA, Dr. Ann Keeley (SPRD), and Drs. Kelly Hurt, Kim Winton, and Hai Shen (Dynamac) provided RPM Paul Marchessault with responses to earlier review comments concerning an annual system performance and ecological impact monitoring report. It was noted that the original review comments were based upon limited information and the response addressed many of the TSC review comments by providing additional information. Critiques to specific responses included those associated with reductive dechlorination processes, capture zone analysis, MNA sampling parameters, and statistical tests.
(96-R01-007) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region IV: On June 29, 2001, Dr. Ralph Ludwig (SPRD) provided RPM Bill Joyner with review comments on a remedial investigation report for the Columbia Nitrogen Site in Charleston, NC. The report was found to be thorough and addressed many of the pre-existing data gaps. The results of the investigation suggest that arsenic and heavy metals are more widespread than originally thought. The data presented an improved picture of the distribution of contaminants at the site and will allow for a better conceptualization and development of remedial strategies.
(00-R04-003) (R. Ludwig(SPRD)580-436-8603)

Technical Assistance to Region IV: On June 27, 2001, Dr. Scott Huling (SPRD) and Dr. Doug McCaulou (HydroGeoChem) provided RPM Bill Osteen with technical comments regarding creosote/slurry wall compatibility at the Cabot Carbon/Koppers Site in Gainesville, FL. A number of issues were discussed including the mechanisms of desiccation, increases in hydraulic conductivity as a result of desiccation cracks, limitations to permeation testing, and the length of time clay will serve as a barrier to creosote. It was recommended to better define the lateral and vertical extent of the DNAPL plume and place monitoring wells outside the wall in critical DNAPL/clay incompatibility areas.
(01-R04-006) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region V: On June 23, 2001, the Center for Subsurface Modeling Support (CSMoS) provided RPM Lolita Hill with comments on a ground-water flow model developed at the Chem-Dyne Superfund Site in Hamilton, OH. The purpose of the review by Dr. David Jewett (SPRD), and Drs. Jerome Cruz and Mingyu Wang (ManTech) was to determine if the model accurately depicts ground-water conditions and if it can be used as an effective decision making tool. Detailed comments were offered in a number of areas including a discussion on conceptual and numerical model development, compliance with VOC baseline conditions, capture zone configurations, and the statistical verification of contaminant clean-up trends.
(01-R05-001) (D. Jewett(SPRD)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Davis, J.A., J.A. Coston, D.B. Kent, K.M. Hess, J.L. Joye, P. Brienen, and K.W. Campo (USGS). "Multispecies Reactive Tracer Test in a Sand and Gravel Aquifer, Cape Cod, Massachusetts: Part 1: Experimental Design and Transport of Bromide and Nickel-EDTA Tracers." EPA Research Report. EPA/600/R-01/007a.
(R. Puls(SPRD)580-436-8543)

Davis, J.A., J.A. Coston, D.B. Kent, K.M. Hess, J.L. Joye, P. Brienen, and K.W. Campo (USGS). "Multispecies Reactive Tracer Test in a Sand and Gravel Aquifer, Cape Cod, Massachusetts: Part 2: Transport of Chromium (VI) and Lead-, Copper-, and Zinc-EDTA Tracers." EPA Research Report. EPA/600/R-01/007b.
(R. Puls(SPRD)580-436-8543)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of July 9, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On June 26, 2001, Dr. Scott Huling (SPRD) provided RPM Farnaz Saghafi with comments on a bench-scale treatment report for the Chemical Leaman Tank Lines Site in Bridgeport, NJ. It was not possible to distinguish between volatile and oxidative loss mechanisms which resulted partially from a methods problem. It was suggested that the bench-scale study be repeated and recommendations were provided to improve the design and methods used in the study. Detailed comments were offered with respect to H_2O_2 requirements, oxidation mass balance, effects of metals, and ground-water pH and buffering capacity.
(00-R02-002) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region III: On June 27, 2001, Dr. Scott Huling (SPRD) provided RPM Debbie Rossi with a review of a remediation technology screening memorandum for the Maryland Sand, Gravel and Stone Site in Elkton, ME. The results of the study were well presented and data interpretation was appropriate. The proposal to evaluate the potential use of chemical oxidation in conjunction with thermal treatment was encouraged. Other comments addressed the delivery of the oxidant to targeted areas, the potential to mobilize metals, and the use of H_2O_2 to reduce the background oxidant demand.
(00-R03-002) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region IV: On June 27, 2001, Dr. Scott Huling (SPRD) and Dr. Bruce Pivetz (ManTech) provided RPM Kevin Misenheimer with comments concerning a remedial design sampling plan for the Southern Solvents Site in Tampa, FL. It was suggested that an on-site laboratory is not recommended unless the analyses can be performed at less cost than a commercial laboratory. Other comments included sampling techniques, the need for a contingency plan to minimize the vertical transport of contaminants in the event that DNAPLs are encountered, and the vertical and horizontal characterization of contaminants in the saturated zone.
(00-R04-005) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region V: In a continuing technical assistance effort at the Chem-Dyne Superfund Site in Hamilton, OH, Dr. David Jewett (SPRD), and Drs. Jerome Cruz and Mingyu Wang (ManTech) provided RPM Lolita Hill with a review of Ohio EPA's comments on two reports developed for the site. In the June 25, 2001, critique it was suggested that the Ohio EPA comments expressed concerns similar to those in an earlier CSMoS review. The majority of those concerns focused on the need to provide supporting evidence to justify decisions made in the development of the ground-water flow model and conclusions made in the 1999 annual report.
(01-R05-001) (D. Jewett(SPRD)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilson, John T., and Don Kampbell (SPRD), and Mark Ferrey and Paul Estuesta (Minnesota Pollution Control Agency). "Evaluation of the Protocol for the Natural Attenuation of Chlorinated Solvents: Case Study at the Twin Cities Army Ammunition Plant." EPA Report. EPA/600/R-01/025.
(J. Wilson(SPRD)580-436-8534)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of July 23, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On July 18, 2001, Dr. John Wilson (SPRD) provided RPM Debra Rossi with a review of a technical memorandum concerning a screening investigation to determine the viability of using enhanced bioremediation as a component of remedial alternatives during the Focused Feasibility Study at the Maryland Sand, Gravel, and Stone Site in Elkton, ME. It was suggested that enhanced bioremediation is a viable technology with the caveats that: it must be anaerobic and designed to treat chlorinated solvents, it may be necessary to follow with aerobic technology to treat residual BTEX compounds, and other technologies must be applied to the LNAPL source areas.
(00-R03-002) (J. Wilson(SPRD)580-436-8534)

Technical Assistance to Region V: On July 5, 2001, Drs. John Wilson and Elise Striz (SPRD) provided RPM Kyle Rogers with a review of Regional comments pertaining to a ground-water flow model developed by SPRD for the Thermo-Chem Site in Muskegon, MI. The review discussed the limitations of using the particle tracking model to simulate contaminant fate and transport in considerable detail. Model outputs using various scenarios were also provided comparing water levels and vertical gradients to field observations. The locations of proposed plume monitoring transects was discussed along with future sampling plans.
(98-R05-003) (J. Wilson(SPRD)580-436-8534)
(E. Striz(SPRD)580-436-8594)

PRESENTATIONS

Jorgensen, E.E. (SPRD). "Microhabitat Reviewed: Analysis of a Paradigm." American Society of Mammalogists, 81st Annual Meeting, Missoula, Montana. 2001.
(E. Jorgensen(SPRD)580-436-8545)

Parsons, J.L. and E.C Hellgren (OSU), D.M. Leslie Jr. (USGS), E.E. Jorgensen (SPRD), and R.L. Lochmiller (OSU). "Comparative Nitrogen Requirements of Small Mammals for Reproduction: Consequences of Dietary Niche or Life-History?" American Society of Mammalogists, 81st Annual Meeting, Missoula, Montana. 2001.
(E. Jorgensen(SPRD)580-436-8545)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of July 30, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On July 10, 2001, Dr. David Jewett (SPRD) attended a meeting in Tampa, FL, to present his review comments on a ground-water flow memorandum prepared for MacDill Air Force Base. Discussions were held concerning model development as well as options to improve the data available for model calibration. Assistance is being provided in the preparation of a list of site characterization data needed to better understand hydrogeology and contaminant transport issues.
(01RC04-002) (D. Jewett(SPRD)580-436-8560)

Technical Assistance to Region IV: On May 2, 2001, Jon Johnston, Chief, Federal Facilities Branch, requested review comments on a Treatability Study Work Plan related to in-situ bioremediation and monitored natural attenuation at the Oak Ridge Reservation (Y-12 National Security Complex) in Oak Ridge, TN. In a response dated July 26, 2001, Dr. David Burden (SPRD) and Drs. Kim Winton, Hai Shen, and Zhixun Lin (Dynamac) stated that, although the proposed technologies may play a role in slowing additional off-site migration of the plume, it is unjustified to conclude that bioaugmentation or biostimulation can advantageously replace the existing pump-and-treat system. It was suggested that the presence of DNAPLs be thoroughly evaluated to more reasonably estimate the remediation time frame and the cost of operation.
(01-R04-007) (D. Burden(SPRD)580-436-8606)

Technical Assistance to Region VIII: During July 17-18, 2001, Dr. David Jewett (SPRD) participated in a technical review meeting at the Gilt Edge Mine Superfund Site in Deadwood, SD. Issues discussed were the potential remedial alternatives for waste materials and pit lakes, additional site characterization data needed to assist with remedy selection, and additional monitoring. Also attending the meeting were representatives from EPA Region 8, U.S. Bureau of Reclamation, SD Department of Environment and Natural Resources, SD Department of Fish and Game, and SD School of Mines and Technology.
(01-R08-001) (D. Jewett(SPRD)580-436-8560)

Technical Assistance to the Louisiana Department of Environmental Quality: On July 26, 2001, Steven Acree and Dr. John Wilson (SPRD) and Drs. Daniel Pope and Kelly Hurt (Dynamac) provided a review of available information regarding vinyl chloride contamination in ground-water near the Myrtle Grove Trailer Park in Plaquemine, LA. The comments addressed hypotheses concerning the original material spilled, mechanisms of degradation, age of the spill, and if it was a single release or from multiple sources. Suggestions were offered with respect to future investigations including a permanent monitoring well network, vertical profiling of the contaminant distribution, and additional sampling to better define the plume in the direction of potential receptors such as the city wells.
(01RC06-001) (S. Acree(SPRD)580-436-8609)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of August 6, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On August 1, 2001, Steven Acree (SPRD) provided OSC Donn Zuroski with a response to comments on a work plan for the installation of fully penetrating wells at the Sparks Solvent/Fuel Site in Sparks, NV. In general, the proposed locations of the new extraction wells and additional monitoring well locations are appropriate. The proposed pumping rates are acceptable as initial estimates of rates of capture but modifications may be made based on hydraulic gradients observed during pumping. It was suggested that additional monitoring wells be specified as well pairs and detailed recommendations were offered to improve this aspect of the monitoring approach.
(94-R09-001) (S. Acree(SPRD)580-436-8609)

RESEARCH IN PROGRESS

EPA Research Supports Enforcement Action: The Environmental Protection Agency (EPA) Region 6 exercised rarely used emergency powers granted by the federal Safe Drinking Water Act to compel five swine farms in Kingfisher and Major Counties in Oklahoma to give families in the area safe drinking water and identify the extent of existing contamination (EPA News Release, 06/07/01, http://www.epa.gov/region6/). One of these swine farms, the Fairview Nursery located near Canton, Oklahoma, has been the focus of an ongoing SPRD research project which had been funded under the NRMRL Laboratory Director's Special Grants Program. The objective of the research project, led by Dr. Stephen Hutchins (SPRD), has been to evaluate the potential for ground-water contamination from swine confined animal feeding operations (CAFOs), and this facility had been selected as one of the field sites.

SPRD researchers conducted extensive site characterization studies around the facility last year and installed eight pairs of clustered monitoring wells to provide a vertical and horizontal profile of ground-water quality, and initiated a quarterly monitoring program focused on a wide variety of potential contaminants. Results of this effort clearly show increased nitrate levels downgradient of the spray application area. SPRD provided EPA Region 6 with extensive data from site characterization and monitoring efforts, some of which were used as the information base for this Enforcement Action. SPRD researchers have been collaborating with Region 6 personnel to better define ground-water flow and transport at this facility, and to help delineate the extent of the contamination. This cooperation will not only provide Region 6 with additional information for decision-making, but will provide Dr. Elise Striz (SPRD) with the necessary facility information to develop a ground-water flow model for this site. Collectively, these efforts will allow a much clearer assessment of the potential for swine CAFOs to negatively impact ground-water quality.

(S. Hutchins(SPRD)580-4368563)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of August 27, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On August 21, 2001, Dr. Ralph Ludwig (SPRD) and Drs. Hai Shen and Jin-Song Chen (Dynamac) provided RPM Harold Ball with review comments of the "In Situ Redox Manipulation (ISRM) Treatability Study Work Plan" for the Riverbank Army Ammunition Plant in Riverbank, CA. In general, the work plan appeared to be well done although lacking in detail with respect to the rate of injection, pressure, and volume of reagent. In-situ manipulation involving the use of sodium dithionite has shown great promise for treating hexavalent chromium in ground water. It was pointed out that an important component of the proposed study will be the performance monitoring system. Detailed comments were offered with respect to the need for sufficient hydraulic conductivity, aquifer clogging, and the possible re-oxidation of $Cr(OH)_3$.
(01-R09-003) (R. Ludwig(SPRD)580-436-8603)

PRESENTATIONS

Jorgensen, E.E. (SPRD), A.E. West (Oak Ridge Inst. for Sci. and Edu.), and D.E. Engle and S.J. Tunnell (Okla. St. Univ.). "Soil Nitrate and Ammonium Through 2 Years of Selective Herbivory and Chronic Nitrogen Enrichment." Presentation at the 86th Annual Meeting of the Ecological Society of America. Madison, Wisconsin. August 7, 2001.
(E. Jorgensen(SPRD)580-36-8545)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Yang, Sanyuan and Alexandra Navrotsky (Univ. of California at Davis) and Rick Wilkin (SPRD). "Thermodynamics of Ion-Exchanged Natural Clinoptilolite." American Mineralogist. May 2000.
(R. Wilkin(SPRD)580-436-8874)

Jorgensen, Eric E. (SPRD). "Dispersal as a Mechanism Limiting Diversity of High Latitudes." Biota, Vol. 1, Issue 2, Pages 67-76, 2000.
(E. Jorgensen(SPRD)580-436-8545)

Hantush, Mohamed M. (SPRD) and Miguel A. Mario (Univ. of California at Davis). "A Characteristic Solution to Nitrate Transport and Fate in Ground Water in Agricultural Watersheds." Proceedings, American Society of Chemical Engineers, Joint Resources Engineering and Planning Management Conference, Minneapolis, MN. July 30 - August 2, 2000.
(J. Williams(SPRD)580-436-8608)

Jorgensen, Eric E. (SPRD) and Kelly L. Chesser (East Central Univ). "Interspecific Differences in Grass Seed Imbibition." Western North American Naturalist 60(4), 2000.
(E. Jorgensen(SPRD)580-436-8545)

Hantush, Mohamed M. (SPRD) Morihiro Harada (Meijo Univ., Japan), and Miguel A. Mario (Univ. of California at Davis). "Modification of Stream Flow Routing for Bank Storage. Proceedings, American Society of Chemical Engineers, Joint Resources Engineering and Planning Management Conference, Minneapolis, MN. July 30 - August 2, 2000.
(J. Williams(SPRD)580-436-8608)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center

Status Report for the Week of September 10, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On September 5, 2001, Dr. Ann Keeley (SPRD) and Drs. Jerome Cruz and Mingyu Wang (ManTech) provided RPM Dick Goehlert with a response to Tetra Tech NUS, Inc. comments concerning a July 31, 2001, review of modeling activities at the Savage Well Municipal Water Supply Superfund Site in Milford, NH, which was prepared by USEPA-Ada and the USGS. A number of issues were addressed including a comparison between the USGS MODFLOW model and the conversion of that model to VisualMODFLOW, remedial time frame evaluations for MNA and ground-water extraction alternatives, optimization process for ground-water extraction alternatives, and cumulative contaminant mass removal.
(00-R01-003) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region II: On August 28, 2001, Dr. Scott Huling (SPRD) provided RPM Farnaz Saghafi with review comments for a pilot test report for the Chemical Leaman Tank Lines Superfund Site in Bridgeport, NJ. It was suggested that, in the bench-scale treatability study, it was not possible to distinguish between volatile and oxidative contaminant reductions in the test reactors as a result of methods problems. With respect to the pilot test plan, a number of comments were offered including an overview of the chemical processes involved, field operations, soil sampling and analysis, monitoring parameters, the need for sentry wells, and the interpretation of data.
(00-R02-002) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region II: On September 4, 2001, Dr. Scott Huling (SPRD) and Dr. Bruce Pivetz (ManTech) provided RPM Farnaz Saghafi with additional calculations and analyses regarding the results of the bench-scale treatability study at the Chemical Leaman Tank Lines Superfund Site in Bridgeport, NJ. The information included an evaluation of the volatilization of organic contaminants and the displacement of contaminated solution from the reactors, and field screening measurements. Overall, the results of the preliminary analysis suggested that errors have occurred in the design and implementation of the bench-scale treatability study, and that the study should be repeated after significant improvements to the design have been achieved.
(00-R02-002) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region IX: On August 31, 2001, Steven Acree (SPRD) and Drs. Kelly Hurt and Jin-Song Chen (Dynamac) provided Hydrologist Herb Levine with comments concerning a "Five-Year Review Report" for the Motorola 52nd Street Superfund Site in Phoenix, AZ. The review focused on the performance of a ground-water extraction system. Although contaminant concentrations appear to be declining in many wells, the available data were not sufficient to allow a conclusive evaluation of contaminant capture by the extraction wells, particularly in bedrock. It was recommended that additional monitoring wells/piezometers be installed, both in the bedrock and alluvium, between and downgradient of the extraction wells to allow more accurate capture analyses and to determine the distribution of contaminants.
(01-R09–002) (S. Acree(SPRD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Black, Lisa, and Dennis Fine (ManTech). "High Levels of Monoaromatic Compounds Limit the Use of Solid-Phase Microextraction of Methyl *tert*-Butyl Ether and *tert*-Butyl Alcohol." Environmental Science and Technology. Volume 35, Issue 15. August 1, 2001.

(R. Cosby(SPRD)580-436-8512)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of September 17, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: In response to a July 31, 2001, request from RPM Joel Hennessy, Dr. Ann Keeley (SPRD) and Drs. Hai Shen and Kelly Hurt (Dynamac) provided review comments on a proposal to use monitored natural attenuation (MNA) to remediate benzene and PAHs at the Bethlehem Steel facility in Bethlehem, PA. The preliminary measurements of natural attenuation parameters provided insufficient information to determine if biodegradation is occurring and it was suggested that MNA appears to be hindered significantly since the presence of fractured flow will limit appropriate monitoring. Detailed comments were offered in a number of areas including additional investigations to assess MNA, the role of capping and SVE in source control, and stimulating aerobic microorganisms through aeration of the subsurface. Also provided was a summary of remedial actions and current status for similar Superfund sites.
(01-R03-006) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region IV: On September 10, 2001, Dr. Scott Huling (SPRD) and Dr. Bruce Pivetz (ManTech) provided RPM Kevin Misenheimer with review comments on a draft basis of design report for the Southern Solvents Superfund Site in Tampa, FL. General comments concerned factors which influence the selection of soil vacuum extraction (SVE) or excavation for remediation. Also provided was a contingency plan to establish an upper limit on the volume of soil to be excavated. Specific comments were offered with respect to the nature and extent of contamination in unsaturated soil, and that the effectiveness, impacts, and relative costs of SVE and excavation should be re-examined to justify the final selection of remedial methods.
(00-R04-005) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region V: On September 7, 2001, Dr. John Wilson (SPRD) provided RPM Timothy Prendiville with comments concerning a draft work plan for a sulfate addition pilot test and additional hydrogeological investigations at the West KL Avenue Landfill in Kalamazoo County, MI. The detailed comments focused on the pumping rate of an extraction and injection system which includes a sulfate amendment. Other comments addressed the locations for extraction, injection, and monitoring wells.
(95-R05-004) (J. Wilson(SPRD)580-436-8534)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Hurt, Kelly L., (Dynamac), and Frank Beck and John T. Wilson (SPRD). "Implications of Subsurface Heterogeneity at a Potential Monitored Natural Attenuation Site." Ground Water Monitoring and Remediation. Summer, 2001.

(J. Wilson(SPRD)580-436-8534)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center

Status Report for the Week of September 24, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: In response to an August 24, 2001, request from RPM Paul Marchessault, Dr. Ann Keeley (SPRD) and Drs. Hai Shen, Kelly Hurt, and Kim Winton (Dynamac) provided a critique of a Memorandum of Resolution (MOR) for a document titled "Draft Landfill-1 Annual System Performance and Ecological Impact Monitoring Report." The September 17, 2001, review comments, which concerned the Massachusetts Military Reservation Superfund Site on Cape Cod, MA, followed a conference call on August 2, 2001. Generally, most of the issues which were discussed during the conference call had been adequately resolved. It was noted that no changes in the extraction rate from wells will occur until a further assessment has been completed. MNA parameters will continue to be monitored and its long-term effectiveness will continue to be evaluated.
(96-R01-007) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to USEPA-NERL: On September 14, 2001, Steven Acree (SPRD) provided Hydrologist Dr. Jim Weaver with the results of an electromagnetic borehole flowmeter survey which he performed in December 2001 within the Upper Glacial Aquifer at the former Getty service station site in Uniondale, NY. These data were used to estimate the vertical distribution of the horizontal hydraulic conductivity.
(Misc.) (S. Acree(SPRD)580-436-8609)

PRESENTATIONS

An, Youn-Joo, Don Kampbell, and Guy Sewell (SPRD). "Occurrence of Methyl Tert-Butyl Ether at Five Marinas in Lake Texoma." American Chemical Society Environmental Division Annual Meeting, Chicago, IL. August 28-30, 2001.

(D. Kampbell(SPRD)580-436-8564)

Kampbell, Don H. (SPRD), Jerry E. Hansen (AFCEE), Bruce M. Henry (Parsons Engr.), and John R. Hicks (Parsons Engr.). "Natural Attenuation of Fuel Hydrocarbons at Multiple Air Force Base Demonstration Sites." First International Congress on Petroleum Contaminated Soils, Sediments, and Water. London, UK. August 14-17, 2001.

(D. Kampbell(SPRD)580-436-8564)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Kampbell, Don H. (SPRD), Jerry E. Hansen (AFCEE), Todd H. Wiedemeier (Parsons Engr.) and Bruce M. Henry (Parsons Engr.). "Natural Attenuation of Chlorinated Solvents at Multiple Air Force Base Demonstration Sites." Proceedings of 2001 Conference on Environmental Research. Manhattan, KS. May 22-24, 2001.
(D. Kampbell(SPRD)580-436-8564)

Kampbell, Don H. (SPRD), Youn-Joo An, and Vanessa R. Williams (SPRD). "Influence of Methyl Tert-Butyl Ether on Lake Water Algae." Bull. Environ. Contam. Toxicol. (2001) 67:574-579.
(D. Kampbell(SPRD)580-436-8564)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of October 1, 2001

TECHNICAL ASSISTANCE

Technical Assistance to the Technology Innovation Office: On September 25, 2001, Dr. Ann Keeley (SPRD) provided Linda Fiedler (TIO) with review comments on an Interstate Technology and Regulatory Cooperation Work Group (ITRC) document titled "A System Approach to In Situ Bioremediation." In general, the manuscript was found to be well written, timely, comprehensive, and appeared to be directed at the proper audience. A number of comments were offered to improve the technical accuracy of the document.
(01-R00-002) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region I: On September 27, 2001, Dr. Scott Huling (SPRD) and Dr. Bruce Pivetz (ManTech) provided RPM Joseph Lemay with technical review comments on a pilot field-scale study work plan for the Resolve Superfund Site in North Dartmouth, MA. In general, the work plan adequately addressed concerns expressed in previous reviews and provided significant additional information supporting phytoremediation as a potential component of remedial activities. Detailed comments were given in a number of areas including sampling to obtain a mass balance, contaminant transport characteristics, modeling estimates, and system performance.
(01-R01-002) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region VI: In response to a July 16, 2001, request from Superfund Branch Chief William Honker, Dr. Randall Ross (SPRD) and Dr. Milovan Beljin (Dynamac) met with RPM David Abshire and state RPM Fay Duke at the Regional office to discuss technical issues regarding potential remedial alternatives at the Texarkana Wood Preserving Site in Texarkana, TX. Issues discussed included proposed site characterization, NAPL delineation, and concerns regarding future modeling activities. SPRD will provide recommendations regarding issues discussed during the meeting.
(01-R06-001) (R. Ross(SPRD)580-436-8611)

Technical Assistance to Region IX: On September 26, 2001, Dr. Scott Huling (SPRD) and Dr. Bruce Pivetz (ManTech) provided RPM Michael Work with comments concerning a draft in-situ chemical treatability work plan for the Hunters Point Shipyard in San Francisco, CA. A number of technical issues were identified regarding the use of in-situ chemical oxidation (especially Fenton's reagent), several of which were discussed during a September 24, 2001, conference call with Region 9 and their contractor, and the Navy. It was recommended that these concerns be fully investigated prior to implementing field tests.
(00-R09-004) (S. Huling(SPRD)580-436-8610)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of October 15, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On October 2, 2001, Dr. Mary Gonsoulin (SPRD) and Dr. Daniel Pope (Dynamac) participated in a conference call concerning the Standard Chlorine of Delaware Site in Delaware City, DE. Also involved in the meeting were representatives from Region 3, PRP, and consultants. The focus of the discussions centered around the reasons why EPA decided to terminate further studies of the bioremediation of contaminated soil to pursue thermal treatment. It was made clear that if the PRP wished to conduct further bioremediation studies at their own expense in parallel with a thermal treatment design, they could so.

(M. Gonsoulin(SPRD)580-436-8616)

FY 2001 SPRD ACTIVITIES

During FY01, there were 81 Superfund **Technical Assistance** activities at 50 sites and 15 RCRA activities at 10 sites. There were 31 Superfund and 6 RCRA requests for assistance entered into the Technical Support Center tracking system during FY01. Of these, 23 Superfund and 4 RCRA sites were at new locations. One Brownfield Site in Wisconsin was added to the review system. Four **Miscellaneous Technical Assistance** activities have been provided to the Office of International Activities, Region 3, and Technology Innovation Office. These involved determining the cause for an outbreak of illness in the Ukraine; implementing riparian management principles in Worcester County, MD; and the review of documents titled "Use of Bioremediation at Superfund and Other Federal Cleanup Program Sites" and "A System Approach to In Situ Bioremediation." The Center for Subsurface Modeling Support **(CSMoS)** has distributed about 11,822 models. In addition, about 406 technical assistance responses have been provided to telephone and E-Mail requests. The Subsurface Remediation Information Center **(SRIC)** has provided 1,517 SPRD publications in response to 422 requests to all levels of government, private consultants, industry, educational institutions, and foreign countries. There were thirty-nine **Publications** in scientific journals, EPA Research reports, briefing documents, and issue papers. In the area of **public service activities**, three SPRD scientists were appointed to the newly constituted Ada Water Resources Board, and six served as judges at the 2001 Oklahoma State Science and Engineering Fair at East Central University.

(J. Jones(RSKERC)580-436-8593)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Hurt, Kelly L. (Dynamac), and Frank P. Beck and John T. Wilson (SPRD). "Implications of Subsurface Heterogeneity at a Potential Monitored Natural Attenuation Site." Field Innovation Forum. Summer 2001. Ground Water Monitoring and Remediation.

(F. Beck(SPRD)580-436-8554)

Azadpour-Keeley, Ann (SPRD), Jack W. Keeley (Dynamac), Hugh H. Russell (CHR2 Environmental Services), and Guy W. Sewell (SPRD). "Monitored Natural Attenuation of Contaminants in the Subsurface: Applications." Summer 2001. Ground Water Monitoring and Remediation.

(A. Keeley(SPRD)580-436-8890)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of October 22, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: As part of an ongoing cooperative research project with RPM Joseph LeMay, Dr. Robert Ford and Frank Beck (SPRD), Patrick Clark (TTSD-Cincinnati), and Thomas Holdsworth (LRPCD-Cincinnati) carried out site characterization and field sampling activities September 10-19, 2001, at the Industri-Plex Superfund Site in Woburn, MA. Tasks included on-site characterization of ground- and surface-water geochemistry employing a variety of methodologies, collection of sediments and delineation of pond morphology in a downgradient wetland, and characterization of the aquifer. This investigation resulted in the completion of an effort to monitor the recovery of the pond's geochemistry following a storm event in April 2001. This effort was facilitated using a permanent multi-level sampling station within the water column while taking Geoprobe conductivity probe measurements within the water column and shallow sediments. These results will be used to map the recovery of the typically stratified pond to pre-storm conditions and to assess the role of natural attenuation processes in mitigating arsenic transport through an urban, industrialized watershed.
(97-R01-002) (R. Ford(SPRD)580-436-8872

Technical Assistance to Region II: On October 12, 2001, Dr. David Burden (SPRD) and Dr. Hai Shen (Dynamac) provided RPM Nigel Robinson with review comments on the focused remedial assessment for soil at the Chemical Control Corporation Site in Elizabeth, NJ. The document presented the use of a multi-phased in-situ treatment as the remedial alternative for contaminated soil at the site. In general, the phased treatment, through promoting both anaerobic and aerobic bioremediation appears to be an efficient approach for the remediation of contaminant mixtures including BTEX and solvents. Concerns were expressed regarding the use of hydrogen peroxide due to the potential to inhibit or destroy microorganisms thereby limiting the efficiency of the subsequent in-situ aerobic bioremediation. Concern was also expressed about the brackish ground water affected by tidal fluctuations and the effectiveness of enhanced bioremediation.
(01-R02-003) (D. Burden(SPRD)580-436-8606)

Technical Assistance to Region III: On October 10, 2001, in a continuing technical assistance effort at the Bethlehem Steel Site in Bethlehem, PA, Dr. Ann Keeley (SPRD) and Drs. Kelly Hurt and Hai Shen (Dynamac) participated in a conference call with RPM Linda Matyskiela and Site Geologist Joel Hennessy. Also participating in the conference were representatives from the State of Pennsylvania (PADEP). The focus of the conference was questions from PADEP and Region 3 concerning the proposed use of monitored natural attenuation (MNA) to address contamination related to inactive coke oven operations at the site. The issues discussed included the use of MNA in a fractured bedrock aquifer, other monitoring parameters to evaluate MNA, the use of volatile fatty acids to provide insights into the types of microbial activity, the importance of identifying other possible biodegradation compounds, and recommendations as to the importance of determining the rate of biodegradation.
(01-R03-006) (A. Keeley(SPRD)580-436-8890)

Technical Assistance to Region VII: On October 11, 2001, Dr. Ralph Ludwig (SPRD) and Drs. Hai Shen and Jin-Song Chen (Dynamac) provided RPM Mary Peterson with review comments on a draft remedial investigation report for the Chemical Commodities Site in Olathe, KS. The report was found to be thorough in addressing the nature and extent of contamination and appropriately described the geology and hydrology of the site. It was suggested that issues requiring further consideration include the characterization of residual DNAPLs, conceptual model, limitations of using MNA due to the widespread presence of fractures, and the mobility of metals.
(01-R07-001) (R. Ludwig(SPRD)580-436-8603)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of November 12, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On October 17, 2001, Dr. David Burden (SPRD) and Drs. Kim Winton and Jin-Song Chen (Dynamac) provided RPM Debbie Rossi with a technical review of a preliminary calibration of a ground-water flow model for the Army Creek Landfill in New Castle County, DE. The report detailed the site conceptual model and provided a preliminary model calibration. Issues discussed included the selected recharge rate, calibration criteria other than ground-water levels, boundary conditions, and the size of the calibration area.
(01-R03-002) (D. Burden(SPRD)580-436-8606)

Technical Assistance to Region IX: On October 15, 2001, Dr. Ralph Ludwig (SPRD) provided RPM Harold Ball with review comments on a chromium treatability study status report for the River Bank Army Ammunition Plant in Riverbank, CA. The study involved tests to explore the potential use of sodium dithionite for treating hexavalent chromium in saturated soils at the site. In general, the tests were found to be extensive and explored a range of variables likely to influence the performance of the remediation technology. Concerns were expressed over the use of spiked soils and methods used to determine reaction rate coefficients. Comments were also offered with respect to future pilot-scale and full-scale applications.
(01-R09-003) (R. Ludwig(SPRD)580-436-8603)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Beck, Frank P. Jr. (SPRD), Patrick Clark (Fallon Naval Air Station, NV), Art Fisher (NRMRL, Cinc.), and Guy Sewell (SPRD). "A Case Study Illustrating the Importance of Accurate Site Characterization." 5th Int'l Symposium & Exhibition on Env. Contamination in Central & Eastern Europe (Prague, 2000) FSU Institute for Int'l Coop. Env. Res, Tallahassee, FL.

(G. Sewell(SPRD)580-436-8993)

Benning, Liane G. (Penn. St. Univ. and Univ. of Leeds, UK), Rick T. Wilkin (SPRD), and H.L. Barnes (Penn. St. Univ.). "Reaction Pathways in the Fe-S System Below 100^{o}C." Chemical Geology, Vol. 167 (2000).
(R. Wilkin(SPRD)580-436-8874)

Wilkin, Richard T. (SPRD) and Michael A. Arthur (Penn. St. Univ.). "Variations in Pyrite Texture, Sulfur Isotope Composition, and Iron Systematics in the Black Sea: Evidence for Late Pleistocene in Holocene Excursions of the O_2-H_2S Redox Transition." Geochimica Et Cosmochimica Acta: 65(9), 2001.
(R. Wilkin(SPRD)580-436-8874)

Ford, Robert G. (SPRD), Andreas C. Scheinost (Swiss Federal Inst. of Tech.) and Donald L. Sparks (Univ. of Del.). "Frontiers in Metal Sorption/Precipitation Mechanisms on Soil Mineral Surfaces." Advances in Agronomy, Vol. 74, 2001.

(R. Ford(SPRD)580-436-8872)

Mayer, Paul M. (SPRD) and S.M. Galatowitsch (Univ. of Minn.). "Assessing Ecosystem Integrity of Restored Prairie Wetlands from Species Production-Diversity Relationships." Published in Hydrobiologia. 2001.

(P. Mayer(SPRD)580-436-8647)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of November 26, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On September 24, 2001, Environmental Analyst Christopher Pyott (Massachusetts Department of Environmental Protection) requested assistance in the evaluation of potentially feasible remedial alternatives at the Olin Chemical Site in Wilmington, MA. On November 15, 2001, Steven Acree (SPRD) and Barbara Wilson (Dynamac) provided comments concerning hydraulic containment by ground-water pumping followed by surface treatment, in-situ treatment using biological nitrification/denitrification technologies, in-situ ion exchange, and natural attenuation.
(02-R01-001) (S. Acree(SPRD)580-436-8609)

Technical Assistance to Region III: On November 19, 2001, Dr. Dominic DiGiulio (SPRD) provided RPM Frank Klanchar with review comments concerning a preliminary design report for soil vapor extraction at the Centre County Kepone Site in State College, PA. Detailed comments and recommendations were offered with respect to the verification of spatial propagation of hydraulic fractures and perched-water removal, valving and instrumentation at individual wells, and SVE closure standards. Also provided was a general strategy for performance assessment and closure of soil venting systems.
(98-R03-002) (D. DiGiulio(SPRD)580-436-8605)

Technical Assistance to Region IX: On October 29, 2001, Dr. David Jewett (SPRD) participated in a site visit at the Yerington Mine-Anaconda Copper Co. Site in Yerington, NV. On October 30, 2001, he attended a stakeholders meeting which included EPA Region 9, BLM, Nevada DEP, Lyons County, USFWS, Yerington Paiute Tribe, Walker Lake Paiute Tribe, and various consultants. In addition to airing the concerns of these groups, a technical subgroup was formed to advise on proposed field investigations.
(01-R09-004) (D. Jewett(SPRD)580-436-8560)

Technical Assistance to Region IX: During November 1-2, 2001, Dr. David Jewett (SPRD) attended a technical review team meeting in San Francisco, CA, to discuss remedial activities at the Sulphur Bank Mercury Mine Superfund Site in Clearlake Oaks, CA. Also attending were representatives from EPA Region 9, USACE and their contractor, CA RWQCB, CA DTSC, and LANL. Issues discussed included project status, risk assessment and cultural questions, potential for on-site geothermal power production, and a review of a preliminary draft feasibility study as well as the most recent draft of the remedial investigation.
(97-R09-006) (D. Jewett(SPRD)580-436-8560)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of December 3, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On November 28, 2001, Dr. David Jewett (SPRD) attended a partnering meeting at McDill Air Force Base in Tampa, FL. Others attending the meeting were representatives from EPA Region 4, Florida DEP, U.S. Army Corps of Engineers, MacDill AFB, and consultants. The main focus of the meeting was to discuss the status of ground-water flow modeling. During the meeting, a draft basewide water level monitoring plan was presented. A site visit was conducted to view cores of the Upper and Basal Surficial Aquifer System and the Upper Floridan Aquifer System that had been collected during previous drilling activities.
(01-R04-003) (D. Jewett(SPRD)580-436-8560)

Technical Assistance to Region V: On November 26, 2001, Dr. David Jewett (SPRD) and Drs. Jerome Cruz and Mingyu Wang (ManTech) provide RPM Lolita Hill with review comments on the 2000 Annual Report for the Chem-Dyne Superfund Site in Hamilton, OH. Many detailed and diverse issues were discussed including potential contamination migration pathways, impact of nearby high-capacity production wells, estimates of contaminant mass recovery, capture zone analysis, and the presence of residual contaminant sources. It was also suggested that a ground-water flow and contaminant fate and transport model may be warranted to understand and maximize the effectiveness of the remedial pump-and-treat system.
(01-R05-001) (D. Jewett(SPRD)580-436-8560)

RESEARCH IN PROGRESS

The development of an innovative push probe assay technology for subsurface fuel contamination is being conducted by a U.S. Air Force contractor, Dakota Technologies, Inc. The research effort is a three year project. The involvement of SPRD has been to correlate subsurface probe sensor responses to fuel/solvent measurements in parallel, vertical profile core samples using EPA approved protocol such as EPA SW-846 Method 9074. During the first two years, development has been successful for two probes to detect total petroleum hydrocarbons. Both probes have been field tested at Offutt Air Force Base spill sites. The third year effort will be toward the development of a probe sensor for subsurface chlorinated solvents such as trichloroethene. Measurements have shown good correlation between the Dakota sensor and Method 9074 TPH analyses. The probe, specific for aromatic hydrocarbons, has a detection process called resonance-enhanced multi-photon ionization (REMP). A pulsed-laser is used as the photo-ionization source with a spectral output overlap with absorbance features of aromatic hydrocarbons. Push probes can provide rapid, low-cost techniques to detect and monitor fuel/solvent remediation at spill sites.
(D. Kampbell(SPRD)580-436-8564)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Faulkner, B.R. (SPRD) and J.C. Guitjens (Univ. of NV, Reno). "Water Quality Effects of Irrigation with Drain Water." Applied Engineering in Agriculture. Vol. 17(3). 2001.
(B. Faulkner(SPRD)580-436-8530)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of December 17, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On December 7, 2001, Steven Acree (SPRD) provided RPM Ron Davis with technical review comments on a "Final Design for Permeable Reactive Subsurface Barrier" at the Arrowhead Plating Site in Montross, VA. In general, most of the concerns expressed in earlier reviews have been addressed through revisions to the monitoring programs. However, concerns still exist with regard to the proposed procedures for the verification of PRB performance in a timely fashion. If monitoring data do not conclusively demonstrate that the PRB is performing as designed, it was recommended that additional ground-water monitoring, immediately downgradient from the wall, be performed using direct push technology.
(98-R03-004) (S. Acree(SPRD)580-436-8609)

Technical Assistance to Region IV: On December 3, 2001, Dr. David Jewett (SPRD) provided RPM Patricia Goldberg with review comments on a document titled "Basewide Water Level Monitoring Work Plan" for MaDill Air Force Base in Tampa, FL. General comments addressed the objectives for collecting the information and the frequency of measurement activities. Specific comments were offered in a number of areas including hydraulic conductivity and permeability, distribution of potential monitoring wells, monitoring well accessibility, and tidal influences on ground-water levels.
(01-R04-003) (D. Jewett(SPRD)580-436-8560)

PRESENTATIONS

Su, Chunming and Jarrod A. Tollett (ManTech), and Robert W. Puls (SPRD). "Column Tests on Arsenic Remediation Using Zerovalent Iron." Poster Presentation at the Soil Science Society of America Annual Meeting in Charlotte, NC. October 21-25, 2001.
(R. Puls(SPRD)580-436-8543)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

DiGiulio, Dominic C. (SPRD) and Ravi Varadhan (Johns Hopkins Univ.) "Development of Recommendations and Methods to Support Assessment of Soil Venting Performance and Closure." EPA Report. EPA/600/R-01/070.
(D. DiGiulio(SPRD)580-436-8605)

Wood, A. Lynn (SPRD) and Carl G. Enfield (NRMRL). "In Situ Enhanced Source Removal." EPA Computer Product. EPA/600/C-99/002. (L. Wood(SPRD)580-436-8552)

HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of December 31, 2001

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On December 10, 2001, Dr. Scott Huling (SPRD) attended a meeting at the EPA Region 2 Office to discuss the Chemical Leaman Tank Line Superfund Site in Bridgeport, NJ. Also participating in the meeting were representatives from the Region, GeoCleanse, and Environ Corp. The primary discussion focused on the results of a bench-scale feasibility study to investigate the potential feasibility of using in-situ Fenton oxidation to remediate TCE contaminated sediments at the site. A technical review of the data suggested that contaminant losses from the reactor occurred through volatilization and the displacement of DNAPL and leachate. Recommendations were provided to improve both the methods used in the bench-scale study and the monitoring parameters used to evaluate oxidation performance.
(00-R02-002) (S. Huling(SPRD)580-436-8610)

Technical Assistance to Region IX: During December 10-11, 2001, Dr. David Jewett (SPRD) attended a meeting at the Regional Office to review the RI/FS for the Sulphur Bank Mercury Mine Superfund Site in Clearlake Oaks, CA. Others attending the meeting included representatives from Region 9, state agencies, and consultants. Topics discussed encompassed the status of and comments on the draft RI and FS documents, risk assessment and cultural issues, and OU2 logistical concerns.
(97-R09-006) (D. Jewett(SPRD)580-436-8560)

Technical Assistance to Region IX: During December 12-13, 2001, Dr. David Jewett (SPRD) participated in a technical workgroup meeting in Carson City, NV, to discuss the Anaconda Copper Co. Site in Yerington, NV. Also attending the meeting were representatives from Region 9, NRMRL, BLM, Nevada DEP, BIA, Yerington Paiute Tribe, Walker River Paiute Tribe, BP/ARCO, and consultants. Updates on site-related activities were presented by the various stakeholders and a draft scope of work was discussed by the group. A discussion of the draft "pumpback trench" and "hydropunch" work plans was postponed until a conference call scheduled for December 17, 2001.
(01-R09-004) (D. Jewett(SPRD)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Kampbell, Don H.(SPRD), Youn-Joo An(ORISE), and Guy W. Sewell (SPRD). "Ground WaterQuality Surrounding Lake Texoma during Drought Conditions." Eos. Trans. AGU, 82(47), F491, Fall Meeting. Suppl., 2001.

(D. Kampbell(SPRD)580-436-8564)

Eisenberg, Freddi and Dennis B. McLaughlin (MIT). "Development of a Data Evaluation/Decision Support System for Remediation of Subsurface Contamination." EPA Report. EPA/600/R-01/044.

(M. Gonsoulin(SPRD)580-436-8616)